Graphene oxide & quantum dots.

Four pages from a research edition exploring 1,967 US publications where both phrases appear. A reading route, an interpretation, a technical map and the source words behind a finding.

These are page excerpts, not the full evidence library. Original page numbers and citation identifiers are retained as printed. Links to omitted pages and private sources are not included in this sample. Use the contents above to navigate offline.

A guided reading route

Each stop explains why to read, what the passage establishes and what to investigate next. These selected examples are a route into the evidence, not a ranking of the entire corpus.

01 / A sensing partnership

Microfluidic biosensor for allergen detection / US20170341077A1

Explicit combined use / Description

The biosensor description connects graphene oxide with aptamer-functionalized quantum dots for detecting or quantifying allergens and toxins in liquid samples.

Why read: It provides a concrete way to investigate the roles of recognition, fluorescence and graphene oxide in one sensing arrangement.

Read with care: The field statement is descriptive. In the expanded page-24 text, claim 1 uses a general fluorophore; claim 2 specifies a quantum dot. Keep that distinction when following the claim references.

Investigate next: Inspect the experimental setup, target-specific response and controls before drawing conclusions about sensitivity or real-sample performance.

Evidence E025614 · E025663

Highlighted original / page 11 · Highlighted original / page 24

02 / A catalyst with an explicit material relationship

Oxidative desulfurization of liquid fuels using metal sulfide quantum dots/graphen oxid hybrid nanocatalyst / US10689584B2

Explicit combined use / Claim

The opening claim passage describes a fuel-desulfurization method using a hybrid catalyst comprising metal-sulfide quantum dots intercalated over graphene-oxide layers.

Why read: The claim passage and the preparation description provide two connected routes into a specific catalyst architecture.

Read with care: The original page shows other method conditions alongside the catalyst. The native text interleaves columns; original page 26 was visually checked. This summary does not reproduce the entire claim.

Investigate next: Read the full process conditions and experimental examples, then examine which metal sulfide and loading are used in each example.

Evidence E002478 · E002441

Highlighted original / page 26 · Highlighted original / page 22

Oracle Overview

AI-assisted interpretation, with source-checked editorial corrections recorded in the accompanying data.

Where do the materials explicitly work together?

The biosensor and fuel-processing examples provide concrete starting points. The first describes graphene oxide with aptamer-functionalized quantum dots; the second has an actual claim passage specifying a quantum-dot hybrid catalyst with graphene-oxide layers. They establish two different technical relationships in the inspected text. The surrounding passages also matter: the biosensor uses general fluorophore wording before specifying a quantum dot in a dependent claim, while the catalyst is part of a more detailed processing method.

Evidence E025614 · E025663 · E002478

When do two search terms describe one material?

The lithium-battery and membrane abstracts use "graphene oxide quantum dots" as a material name. The battery abstract specifies an average particle size of 2-9 nm; the membrane places the dots on the outer surface of a polyamide layer. These are distinct application leads for a named material. They should not be counted as evidence of graphene oxide mixed with a separate semiconductor-dot ingredient.

Evidence E001624 · E007489

Can the relationship be a preparation step?

Yes. The gadolinium-chelate abstract describes graphene oxide as a precursor that is processed into graphene quantum dots before chelation. Reading the preparation sequence changes the interpretation of the keyword match: the two names can mark different stages of a process. The abstract also makes imaging-performance statements, but the preparation passage alone cannot substantiate those outcomes or establish biological safety.

Evidence E014864

Technical map

Categories organize all classified occurrences. Publications can appear in multiple categories; counts are not independent inventions. Each summary describes its cited examples, not every item in the category.

Materials and Composites

1,371 publications | 24,982 classified occurrences

Hybrid quantum dots may include graphene/zinc oxide and reduced graphene oxide, while reduced-graphene-oxide-coated plasmonic nanoparticles are separately mentioned. Another passage describes a graphene oxide–halogenated quinone composite and separately reports carbon-dot size distribution.

Evidence E000076 · E000584

Carbon Nanomaterials

1,239 publications | 9,656 classified occurrences

One excerpt expressly identifies graphene oxide quantum dots (GO-QDs), doped GO-QDs, or combinations thereof. Another separately lists graphene oxide and graphene quantum dots as graphene-based materials for electronic-layer roles, rather than specifying their combined use.

Evidence E000730 · E001192

Preparation and application of carbon nanoparticle diode / US10239039B2

Explicitly names graphene oxide quantum dots and doped variants as carbon nanomaterials.

Fabrication and Processing

345 publications | 4,553 classified occurrences

A process forms a metal sulfide/graphene oxide mixture by adding graphene oxide solution to metal sulfide quantum-dot suspension and stirring, thereby intercalating the dots between graphene oxide layers. Another excerpt records water addition during GO-QD preparation.

Evidence E000844 · E002441

Oxidative desulfurization of liquid fuels using metal sulfide quantum dots/graphen oxid hybrid nanocatalyst / US10689584B2

Provides concrete mixing and stirring steps for intercalating metal sulfide quantum dots between graphene oxide layers.

US20170341077A1

Microfluidic biosensor for allergen detection

University of Guelph | Filed 2017-05-24

55 library occurrences | 9 of 37 passages printed | Evidence: PDF | graphene oxide: 43 / quantum dots: 12

Highlighted PDF | 55 source-page matches highlighted

Original PDF - page 11

Section text SHA-256 b1cf3f5f5194af9f1efe2ac7… | Exact passage offsets are in the evidence data.

P013686 … FIELD [0003] The present application relates to the detection of allergens and / or toxins , and more specifically to biosensors and methods for detecting and / or quantifying allergens and / or toxins in a liquid sample using graphene oxide[E025614] and aptamer - functionalized quantum dots[E025615] . …

Original PDF - page 12

Section text SHA-256 d7c66a80879e3262ee5bbc36… | Exact passage offsets are in the evidence data.

P013690 … [0012] In another embodiment , there is provided a kit comprising a probe as described herein and graphene oxide[E025619] . (GO) and aptamer - functionalized quantum dots[E025620] (QDots) . In one embodiment , the target analyte is an allergen and / or In one embodiment , the probe and graphene oxide[E025621] are in separate containers . …

Original PDF - page 14

Section text SHA-256 8798b521a381d5d242816201… | Exact passage offsets are in the evidence data.

P013701 … In one embodiment , the micro fluidic device comprises a microchannel for entry and exit of a liquid sample and a probe , graphene oxide[E025638] and / or probe composition . …

Original PDF - page 16

Section text SHA-256 62aac60ec2e491b239073b04… | Exact passage offsets are in the evidence data.

P013707 … Here , there is described a microfluidic system inte grated with a quantum dots[E025645] (Qdots) aptamer functionalized graphene oxide[E025646] (GO) nano - biosensor for simple , rapid , and sensitive food allergen detection . …